

Survival of Largemouth Bass in the Lake Dardanelle Nursery Pond

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Arkansas Game and Fish Commission

Arkansas AFS Chapter Meeting

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Introduction

Lake Dardanelle

- Large, run of river reservoir
- Impoundment completed 1969
- Approximately 40,000 acres



Lake Dardanelle Nursery Pond

- Used for supplemental stocking of Lake Dardanelle
- Built in 1984
- Approximately 90 acres

Introduction



Nursery ponds have been used since 1960s

- Growth/Survival not often evaluated
- Mortality during release noted from beginning
 - Predators attracted to inflow
 - Maladaptive behaviour

Lake Dardanelle Nursery Pond



- Indications of high mortality beginning 2001
- Acute by 2015
- Immediate action:
 - Timing of release moved to November
- Options:
 - Renovate outlet channel
 - Dredge
 - Build harvest basin

Objectives

1. Evaluate growth and survival of Largemouth Bass in Lake Dardanelle Nursery Pond prior to release
2. Evaluate survival of Largemouth Bass during release
3. Evaluate stock contribution of LMB raised in Lake Dardanelle Nursery pond



Methods

Freeze branded fingerlings (n=37,944)

Raised and branded at Joe Hogan Hatchery

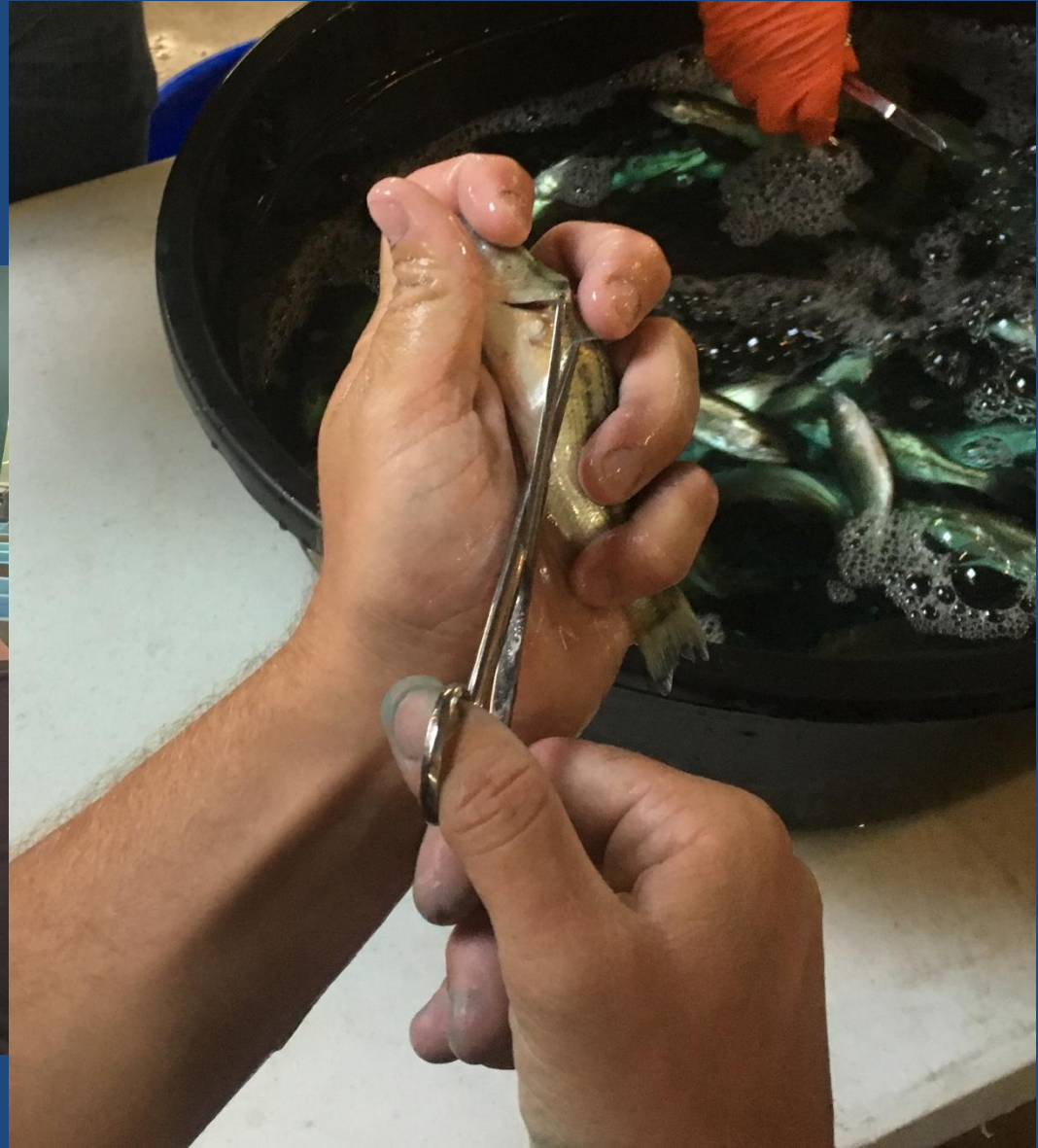
Stocked in nursery pond on 22 Jun 17



Methods

Clipped left fin of advanced fingerlings (n=4,532)

Stocked in nursery pond on 28 Sep 17



Methods

Recapture by boat electrofishing

All fish inspected for marks

Chapman estimate of abundance



Methods

Block net installed in outlet cove before draining

Electrofishing to collect cove residents

Right fin clipped residents



Methods

Pond drained

WQx monitored during draining process

Electrofishing to capture LMB

Chapman estimate of abundance

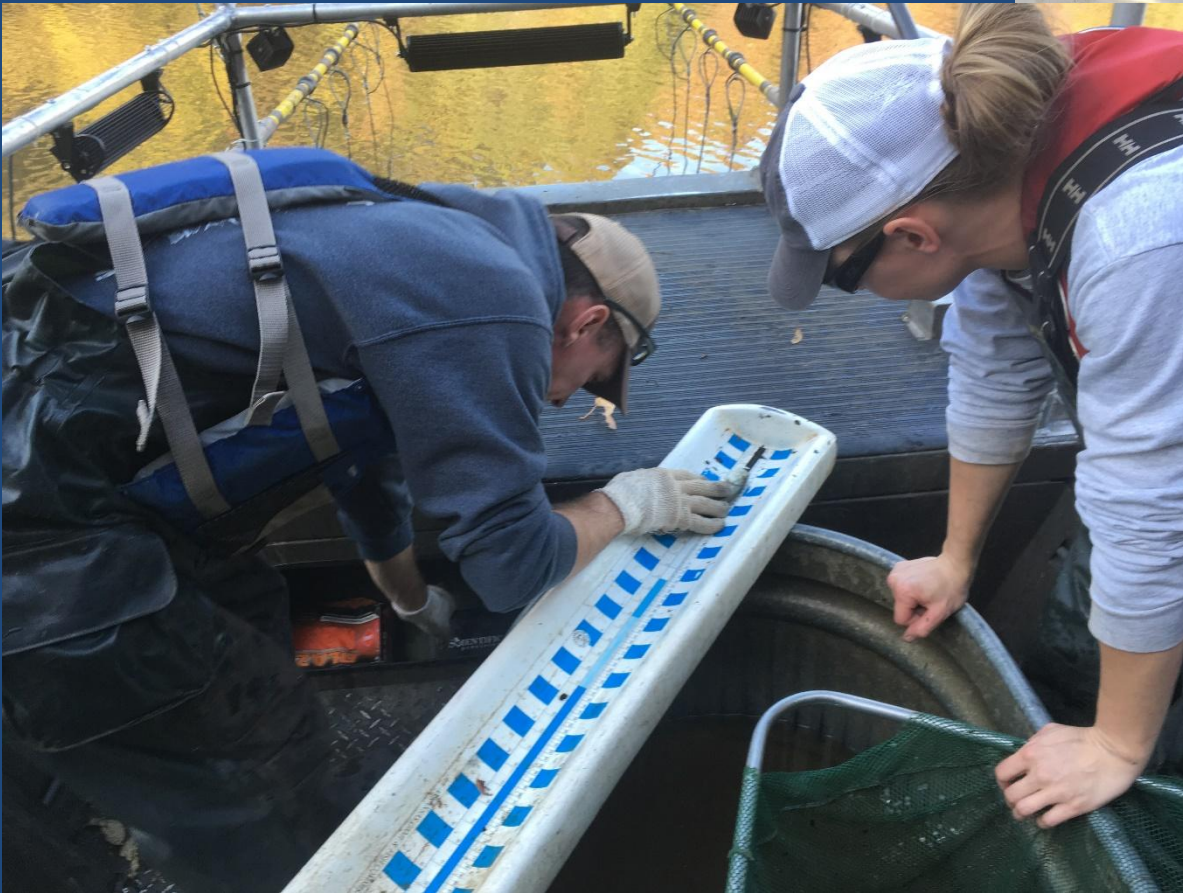


Methods

Block net removed

Electrofishing up and downstream of cove every 2 days

Percent stock contribution (continuing into 2018)



Results

NP

1 Nov 17

Freeze Brand

106

Left Fin Clip

157

Right Fin Clip

0

Unmarked

0

M

4523

C

263

R

157

Estimate

7558 ± 731

Remaining Freeze
Branded Fish

3035

Results

	NP	Outlet Cove	
	1 Nov 17	9 Nov 17	11 Nov 17
Freeze Brand	106		11
Left Fin Clip	157		8
Right Fin Clip	0		4
Unmarked	0		21
M	4523		70
C	263		44
R	157		4
Estimate	7558 ± 731		638 ± 434
Remaining Freeze Branded Fish	3035		159

Results

	NP	Outlet Cove	
	1 Nov 17	9 Nov 17	11 Nov 17
Freeze Brand	106	25	11
Left Fin Clip	157	14	8
Right Fin Clip	0	0	4
Unmarked	0	38	21
M	4523		70
C	263		44
R	157		4
Estimate	7558 ± 731		638 ± 434
Remaining Freeze Branded Fish	3035		159

Results

	NP	Outlet Cove	
	1 Nov 17	9 Nov 17	11 Nov 17
Freeze Brand	106	25	11
Left Fin Clip	157	14	8
Right Fin Clip	0	0	4
Unmarked	0	38	21
M	4523	362	70
C	263	77	44
R	157	38	4
Estimate	7558 ± 731	725 ± 150	638 ± 434
Remaining Freeze Branded Fish	3035	235	159

Results

No marked fish detected outside of the cove until 17 Nov 17

Most emigrants went downstream



Discussion

Mortality Up to Release

Freeze Branded Fish: 37944 on 22 Jun
3035 on 1 Nov

Instantaneous Daily Mortality: 0.0191

Discussion

Mortality Up to Release

Freeze Branded Fish: 37944 on 22 Jun
3035 on 1 Nov

Instantaneous Daily Mortality: 0.0191

Type	State	Instantaneous Daily Mortality	Source
Stocked directly	TN	0.0233-0.0281	Hoffman and Bettoli 2015
Wild	TN	0.0058-0.0225	Hoffman and Bettoli 2015
Wild	AR	0.0078-0.0110	Fernando 2015

Discussion

Very high mortality during the release

Predators

Water Quality

Both?



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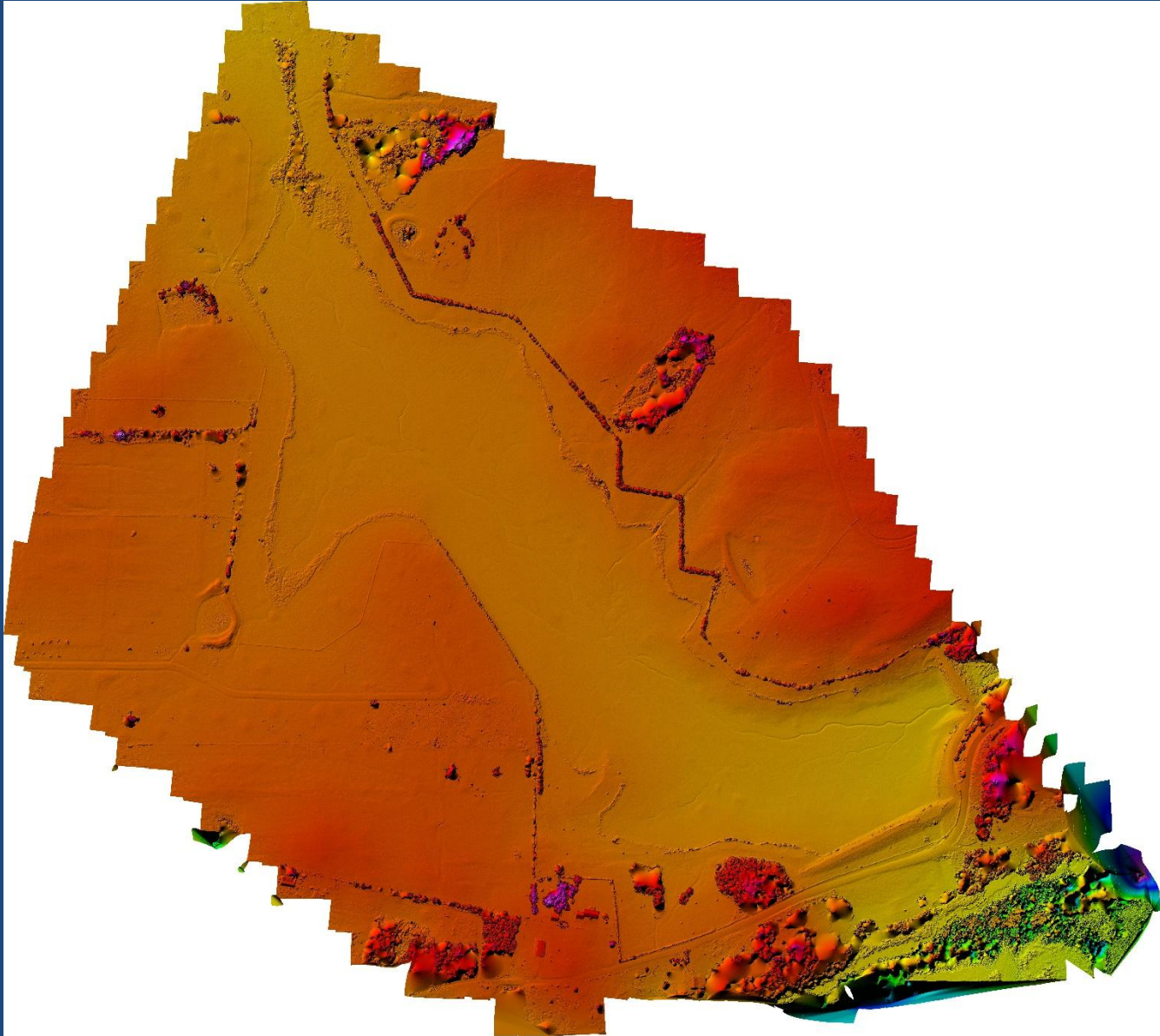
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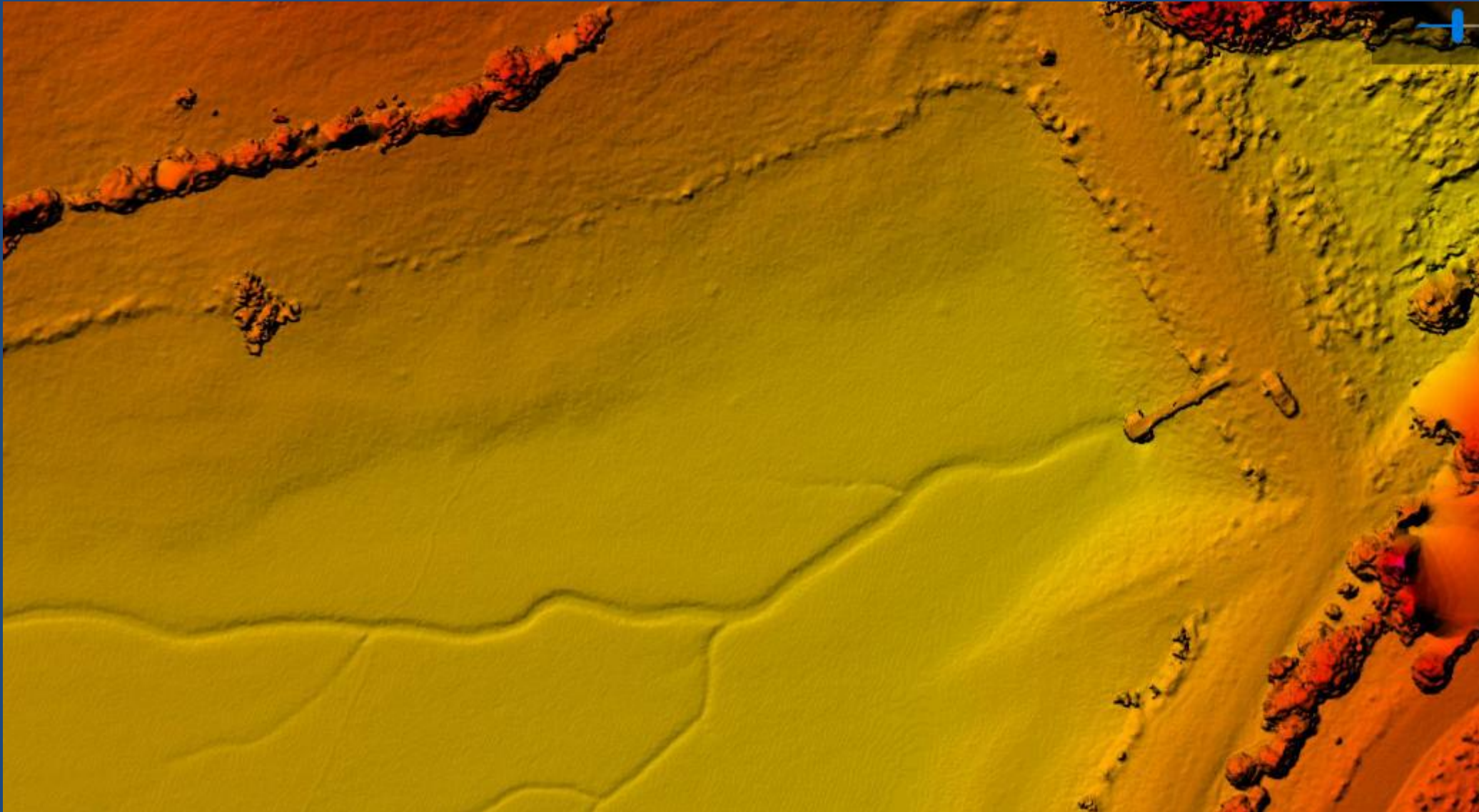
Discussion

Very high mortality during the release

Predators

Water Quality

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Questions?
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